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Extended essay cover

Diploma Programme subject in which this extended essay is registered: World studies

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Title of the extended essay: In what way has Planned Obsolescence
affected the way in which Mobile Phone
technology is consumed in Cali over the last 5 years?

Candidate's declaration

This declaration must be signed by the candidate; otherwise a grade may not be issued.

The extended essay I am submitting is my own work (apart from guidance allowed by the International Baccalaureate).

I have acknowledged each use of the words, graphics or ideas of another person, whether written, oral or visual.

I am aware that the word limit for all extended essays is 4000 words and that examiners are not required to read beyond this limit.

This is the final version of my extended essay.

Supervisor's report and declaration

The supervisor must complete this report, sign the declaration and then give the final version of the extended essay, with this cover attached, to the Diploma Programme coordinator.

Name of supervisor (CAPITAL letters)

Please comment, as appropriate, on the candidate's performance, the context in which the candidate undertook the research for the extended essay, any difficulties encountered and how these were overcome (see page 13 of the extended essay guide). The concluding interview (viva voce) may provide useful information. These comments can help the examiner award a level for criterion K (holistic judgment). Do not comment on any adverse personal circumstances that may have affected the candidate. If the amount of time spent with the candidate was zero, you must explain this, in particular how it was then possible to authenticate the essay as the candidate's own work. You may attach an additional sheet if there is insufficient space here.

has spent a good amount of time doing the research and investigating around the City before-hand. She needed some encouragement initially but she had a mature attitude towards the task. The focus has changed slightly after our initial meeting but the main idea is essentially the same.

Suggestions made by me were heeded and some suggested changes to the format and visualisation of data was also taken aboard.

The research was done well, the data collection was done efficiently and the data was processed. All-in-all the extended essay was done well.

This declaration must be signed by the supervisor; otherwise a grade may not be issued.

I have read the final version of the extended essay that will be submitted to the examiner.

To the best of my knowledge, the extended essay is the authentic work of the candidate.

I spent 5 hours with the candidate discussing the progress of the extended essay.

Assessment form (for examiner use only)

Criteria	Achievement level					
	Examiner 1	maximum	Examiner 2	maximum	Examiner 3	
A research question	<input type="text" value="1"/>	2	<input type="text"/>	2	<input type="text"/>	
B introduction	<input type="text" value="1"/>	2	<input type="text"/>	2	<input type="text"/>	
C investigation	<input type="text" value="2"/>	4	<input type="text"/>	4	<input type="text"/>	
D knowledge and understanding	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
E reasoned argument	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
F analysis and evaluation	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
G use of subject language	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
H conclusion	<input type="text" value="1"/>	2	<input type="text"/>	2	<input type="text"/>	
I formal presentation	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
J abstract	<input type="text" value="0"/>	2	<input type="text"/>	2	<input type="text"/>	
K holistic judgment	<input type="text" value="1"/>	4	<input type="text"/>	4	<input type="text"/>	
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IN WHAT WAY HAS PLANNED OBSOLESCENCE AFFECTED THE WAY IN WHICH
MOBILE PHONE TECHNOLOGY IS CONSUMMED IN CALI OVER THE LAST 5
YEARS?

Extended Essay

No. of words: 3937

May 2014

ABSTRACT

The economist John Maynard Keynes said that economy should grow based on the demand. Planned Obsolescence is a matter of national and international importance. It is a secret mechanism resulting from the culture of consumerism born within the capitalist society which commonly appears in many products, from stockings to computers without us even noticing. It has as its' one and only purpose to increase and support economic growth enlarging the demand for a determined product by increasing the rate in which a product becomes or is perceived as obsolete thus making the consumer repeat the purchase of the product at a faster rate.

In Cali, this technique is being used by enterprisers in several ways on cell phones. It has shown effects over the consumption of this technology within the past 5 years. The efficiency and overall consequences will be examined and evaluated after a small trip to history of how it came to be.

After weeks of research going to stores and providers, no concrete information was given on the phone prices. However, I based most of my analysis in data collected directly from the consumers through questioners I gave to 300 people around the city.

No. of words (abstract): 197

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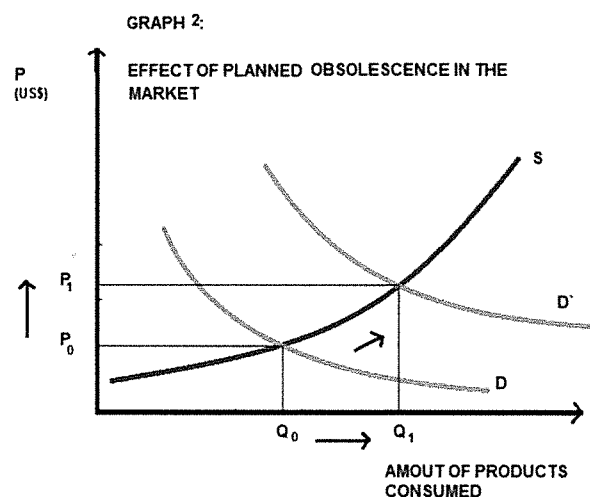
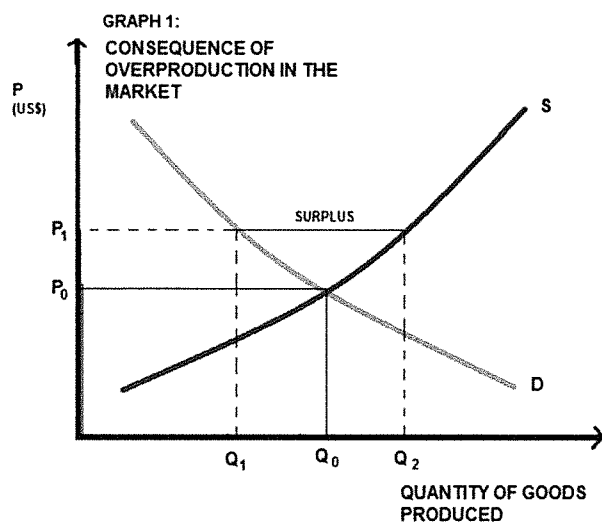
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In what way has Planned Obsolescence affected the way in which Mobile Phone technology is consumed in Cali over the last five years?

INTRODUCTION

Although, planned obsolescence isn't a new subject, it's a topic which has only recently been started to be researched about, and it plays a role of vital importance within the capitalist society.

In the capitalist society, the main concern revolves around economic growth; the reason being that in the study of macro economy, a populations' "wellbeing" is determined by the economic output or GDP (Gross Domestic Product) which is the "extra" value that comes from production of goods and services in a country over a certain period of time. Our entire western society is highly influenced by this system, and so, an entire culture was built around it. It is for this reason that we are now suffering from a phenomenon called "consumerism". Consumerism is a situation in which consumers are encouraged or persuaded to purchase goods which he does not require, in other words, making



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“wants” be seen as “needs” in the eyes of a consumer. This phenomenon is responsible of the culture of consumption.

Planned obsolescence is a concept which first appears shortly after the industrial revolution of the twentieth century, when mass production leads to a definite surplus in supply (amount of a product in a determined market which producers are going to sell), which means that supply exceeds the demand (graph 1). In order to fix this inconvenient situation, a secret mechanism is implanted by entrepreneurs in order to increase the demand, and balance up the growing economy (graph 2). Essentially, planned obsolescence is the way in which products are purposely design to fail, or become obsolete, by shortening it's lifespan, which is the time a product is useful, with the objective to inspire the frequent purchase of the product increasing the demand.

Different types of this technique are widely used on a great variety of products. The following will try to show and evaluate the causes, ways, efficiency and consequences of the use of planned obsolescence in mobile phones in Cali, Colombia by answering the question, in what way has planned obsolescence affected the way in which mobile phone technology is consumed in Cali over the last five years. This is relevant in both a local and international scale considering Cali is an emerging economic power in South America, being one of the most attractive cities for investment in the continent

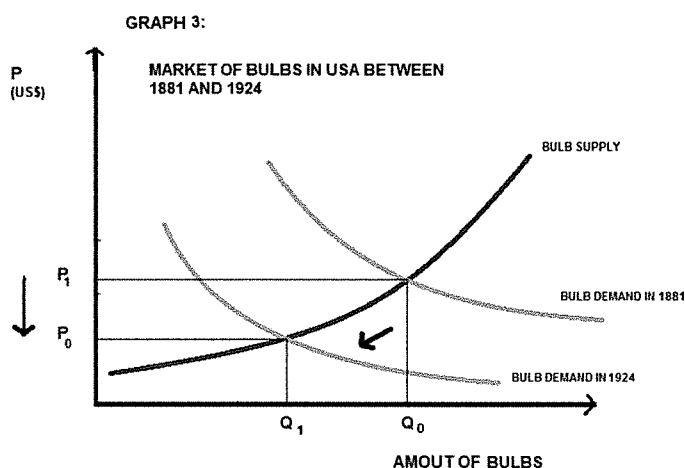
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according to Financial Times. By answering this thesis question, a clearer image of the extent of this measurement and the potential of the system itself can be formed.

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History of Planned Obsolescence

After the industrial revolution and the invention of mass production, manufacture goods production increased its' efficiency tremendously, and technology enabled quality of the goods to increase. By 1895, the French professor, Adolphe Chaillet, created a filament for a light bulb known as the "Shelby Bulb" currently displayed in Shelby, Ohio which has been alight for over a century. Unfortunately, the secret of his filament died with him. Light bulb lifespan, was 1500 hours by 1881, by 1924, that time reached the 2500 hours; however, light bulb life span dropped in the following years being less than 1500 hours in



1926 and as little as 1000 hours by 1940. But how could this filament be such an unique item? Shouldn't scientists with modern technology be able to make even better quality artefacts? The explanation for this aerie pattern may be shown in economic terms (Graph 3). What actually happened is that demand for light bulbs was dropping fast between 1881 and 1924, where light bulb life span was increasing, as it would be expected. However, as this benefits families (from which consumers are formed) since prices decrease so their

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“real income” meaning the purchasing power of their income increases since they are now able to buy more products with the same amount of money and are long lasting products meaning that they won’t have to purchase the same product in a long period of time and that economic resource can be used to buy another product; it is also very detrimental for executives since prices are lower and pursues won’t be so regular and therefore they won’t get as much benefit from their sales; and if demand decreases, production is reduced from Q_0 to Q_1 which could lead to an increase in unemployment. For this reason, that same year (1924) a meeting was held in Geneva, Switzerland, between mayor bulb corporations in order to establish an agreement on the maximum lifespan a bulb would be allowed to have. This is known as the “Phoebus cartel”. The goal was to reach a maximum of 1000 hours, and so a whole process began on reducing the quality of the product. This was the first time planned obsolescence was ever implemented.

During that period, multiple products reduced their lifespan or quality, however by the 1950s a new technique entered the market. The American industrial designer, Brook Stevens started a revolution in design. He was the founder of the design industry. Along his career he designed logos, being one of the people who created the “Coca-Cola” logo, he also began changing the way ordinary products looked giving them a “futuristic” or modern image, which was more appealing to consumers thus, increasing the rate of purchase of products. His brilliant strategy consisted in making the clients desire products rather than needing them, that way they would voluntarily spend. He is responsible of the idea that what we own, defines how happy we are, “happiness through consumption”.

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Types of Planned Obsolescence

Planned obsolescence comes in multiple presentations suitable to the corresponding product it is intended to put out of use or date, in other words, make obsolete with the intention of increasing the purchase of the product. The two main divisions through which obsolescence could be understood are planned, where the product is actually changed or altered in a way so it does fail or is caused to fail; and when it is perceived as being obsolete by changing the way the product looks so it becomes considered undesirable or useless to the buyer even if it continues to be functional just based on its' appearance. This technique has a lot to do with fashion trends and design. Fashion changes rapidly in cycles as a way to enable society to easily identify individuals who don't frequent the purchase of items since they are not "up to date" with what is considered fashionable. It is likely for these individuals to be marked by society as outcasts because of the culture of consumption in which capitalism has immersed the western world. Also, it enables to evidence economic power.

Technical obsolescence is a type of perceived obsolescence which happens when new technology is released in the market and it therefore causes old technology to be considered obsolete even though it still works. In other words, when higher quality technology replaces the old.

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Digital obsolescence is given when old technology is ceased to be constructed and therefore cannot be found, repaired, or available. This type of obsolescence is directly related to technical obsolescence and evolution in science and technology.

Functional obsolescence is common in printers. It consists in the intended or accidental malfunction of certain equipment or goods when they cease to work as they were meant to over a certain period of time.

Finally, postponement obsolescence is related to the gadgets of a product, or tiny technological improvements which are only available in the newest (and usually the most costly) model of the product.

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Mobile Phones in Colombia

Studies show that in 2011 Colombia had more than 44,725,636 mobile phones which represents a 93,76% of the total population of the country. The mayor companies granting the communication service are Movistar with 9'970,595 subscribers, Tigo with 5'179,269, Comcel with 30'271,075 subscribers in 2011(El Espectador.Tecnología.25 ENE 2011).

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Data Analysis

As for most products, planned obsolescence has been used in cellular phones ever since they were created in the late 19 hundreds. The most common types of obsolescence present

in this technological tool are;
technical obsolescence,
functional obsolescence,
postponement obsolescence
and style obsolescence.

Chart 1:
Age Ranges
of People questioned
(years)

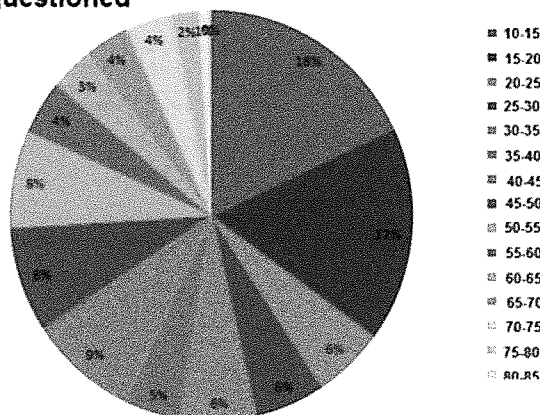
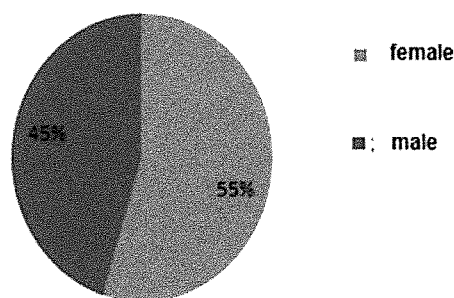


Chart 2:
Gender of People questioned

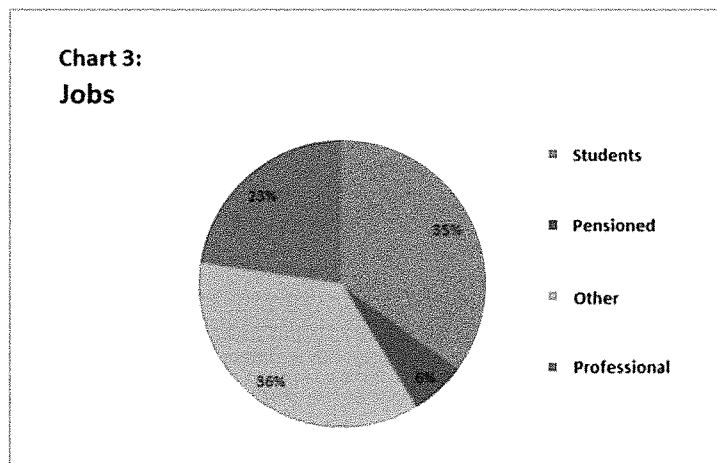


In order to determine the effect planned obsolescence has on the consumption of mobile phone technology in Cali, I prepared questioners and gave them to 300 people from different age ranges between ten and eighty five years of age shown in chart

1, gender (fifty five percent female, forty five percent male), social and economic status,

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measured through the occupation of the individual. The answers were cataloged into four different groups, visible in chart 3. It is understood from this chart that students and



pensioned which represent the extremes from our age range do not produce any sort of financial income. “Other” could be understood as unprofessional professions which receive a relatively low income and in some cases, even minimum wage

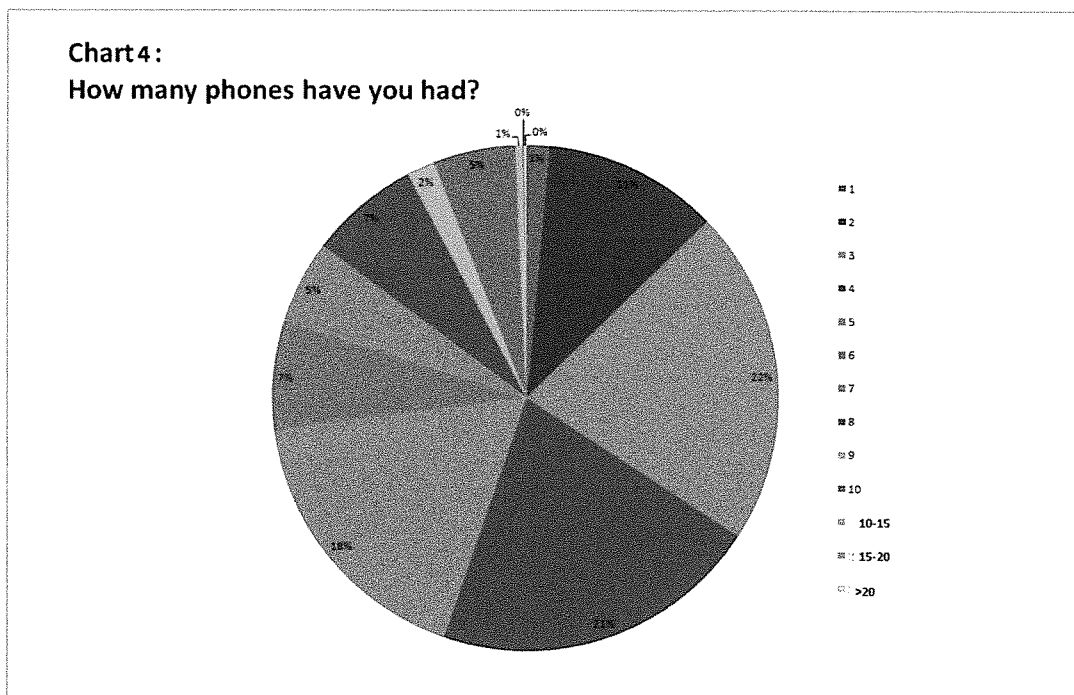
which is currently 589,500 pesos a month, equal to 306.54 US dollars a month. This leaves only twenty three percent “professional” workers with a relatively high income.

Ninety-two percent of the people had a phone. They were asked how they got it, results were, 50,67% were given their phone as a present, 47% bought their own phone and 2,33% didn't have a phone at all. This would explain how a large number of people are in possession of a phone despite the level of income and indicates that although there is a wide range in age, the gender, or the socio economic status, the culture of consumerism is present, but to really understand to what extent it could affect people, they were asked how many phones they have had in their life (chart 4), how often they changed their phone and why (chart 5).

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Results for chart four showed that only 1,41% claim to had have one phone in their lifetime; 11,28%, 2 phones; 21,48%, 3 phones; 21,13%, 4 phones; 17,61%, 5 phones, 7,04%, 6 phones; 5,28%, 7 phones; 7,04%, 8 phones; 1,76%, 9 phones; 5,28%, 10 phones; 0,40% between 10 and 15 phones, and 0,30% were unsure between 15 and 20 phones.

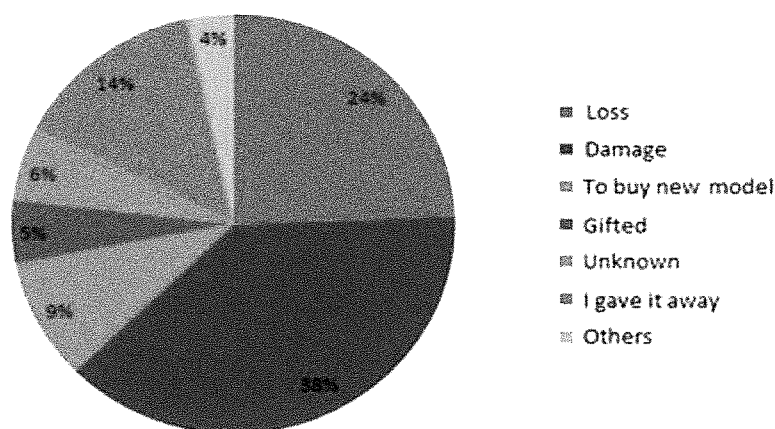
Without doubt, the most repeated data were 3, 4 and 5 phones. The trend is, not many people have has less than 2, and not many people have had more than 8. However, in order to apply the concept of planned obsolescence to the results, age must be considered when given the number of phones had. For those who have only had 1 phone, three age ranges were identified, 50% were between 50-55, 25% between 45-50, and 25% between 15-20. This shows that most of the people who are not that influenced are around 50 years old, however the other 25% could be explained because their age are of students, which means



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they are very likely to have been given their phones rather than buying it themselves. For those who said they had 9 phones a weird pattern is shown. Only two age ranges are displayed, 80% of the people were between 15 and 20 years, and 20% between 45 and 50 years. This shows a huge contrast between consumerism. With 30 years of difference they have consumed the same amount of phones, showing that young consumers tend to buy more phones. For those who have had over ten phones there was surprisingly only one age between 30-40 years. This is interesting because they are not as young as the 15-20, and not as old as 50-55, however they are the range which consumes the most phones. This might be because they are the age in which fits within the economically active population, meaning either “professionals” or “others” from chart 3; and make their own income which makes it highly likeable that they buy their own phones.

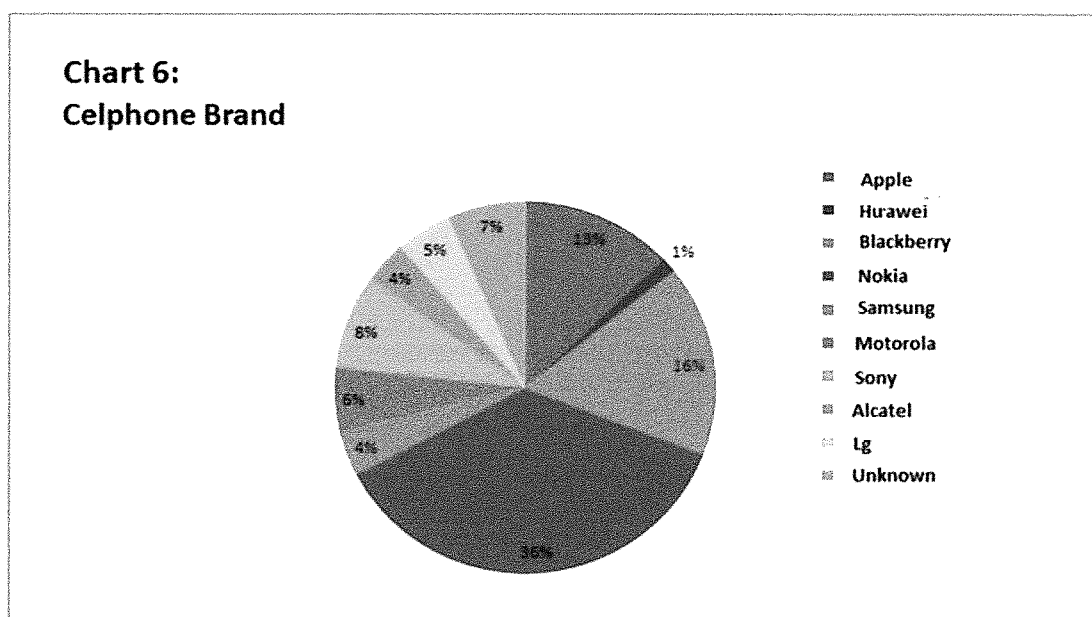
Chart 5:
Reason of the change of phone



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About 93,08% said they changed their phone in a matter of one to two years, while only 6,92% claimed to change their phone every few months. After analyzing the reasons given for the change it is identified that the biggest cause is “damage” with 58%, which could be related to types of planned obsolescence such as, postponement obsolescence when old models of phones become obsolete because they stop being produced along with all of their parts (functional obsolescence), for instance, a charger, case or batteries; or direct attempts to reduce the phone lifespan like the battery lifespan, which has decreased through the years. “To buy the new model” with 9% and “I gave it away” with 14% are related to technical obsolescence, where new technology replaces the old, for example to get a bigger memory or a higher quality camera, or access to internet or better graphics; which are mostly related to the software (which is the intangible collection of data and programs which make the phone work); and style obsolescence, related to the exterior physical appearance of the apparatus, such as the case including size, colour, shape, dimensions, surface. However reasons such as “loss” with 24%, and “gifted a new one” with 5%, give a clear image of the culture of consumption, where no care is given to the artifact since it can be easily replaced for an “even better phone” which will last every time less.

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The cellphone brand of their current phone was also asked. Results were recorded in chart six and displays as follows: Nokia was the most repeated result with 36%. Common models include, 303, 311, C201, ES500, and Lumia. Followed by Blackberry with 16%, with models like, Z10, Curve 9360, Curve 9320, and Bold. Next up was 13% with Apple, i-Phone 5S, i-Phone 5C, and i-Phone 4S. Sony 8%, with it's Sony Erikson and Sony Experia and minorities like Samsung, Alcatel, Motorola, LG and Huawei.

It would be normal that these results do not agree with a national or even international level since in Cali, some brands are still unknown like Huawei, the Chinese brand which is rising at a fast rate in an international level. Perhaps in a few years, statistics will be completely different. It is important to take into consideration the socio economic status (chart 3) while

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analysing this chart since most of these brands are very cheap, and most of our subject population could be rated as having low income, even so, Apple, despite being the most expensive brand, it is the third most frequently purchased. 94% of I-Phone users were students between 14 and 18 years old. 64% were obtained as a gift and 47% of these were to get the new model. A curious fact was that while in other brands not everyone knew the model of the phone, Apple users all know the name of the model. This shows that brand has a determining effect when it is costly because otherwise the model is usually unknown. Another fact was that the models were i- Phone 4, i- Phone 4S, I-phone 5 and i- Phone 5S, meaning that the oldest among the models is only 3 years old.

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Planned obsolescence in the hands of Executives

Executives use design as the biggest way of making their products obsolete. Apple's I-Phone for instance. Since its original I-Phone in 2007, seven more models have appeared in the market, I-Phone 3G in 2008, I-Phone 3GS in 2009, I-Phone 4 in 2010, I-Phone 4S in 2011, I-Phone 5 in 2012, I-Phone 5C in 2013, and the most recent model, I-Phone 5S the same year. Amazingly the difference between the 3 newest models will be displayed.

I-Phone 4S (2011) is available in black and white. It is 4.5 inches high (115.2mm), it's 2.31 inches wide (58.6mm), it's depth is 0.37 inches (9.3mm) and it weighs 4.9 ounces (140 grams). I-Phone 5C is 4.87 inches (123.8 mm) high, 2.31 inches (58.6 mm) wide, has a depth of 0.30 inch (7.6 mm), and weighs 3.95 ounces (112 grams). I-Phone 5S is 4.90 inches (124.4 mm) high, 2.33 inches (59.2 mm) inches wide, has depth of 0.35 inch (8.97 mm) and weighs 4.65 ounces (132 grams). The difference in dimensions does not exceed 0.5 inches in any moment or the 1.0 ounce. The chip they use is (in the same order) A5, A6 and A7, showing functional obsolescence.

The display (meaning the screen graphics, the more pixels it has, the better the resolution will be) for I-Phone 5C and 5S it is the exact same display is 4-inch (diagonal) Retina display with a resolution of 1136-by-640 and 326 ppi (pixels per inch) while for I-Phone 4

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of 3.5-inch (diagonal) Retina display, 960-by-640 resolution and 326 ppi. The real difference is as little as 176 pixels. As for the cellular and wireless, there is absolutely no difference between the three models, the same GSM model (cellular network used by cellphones), same Wi-Fi (Wireless fidelity, a technology that enables the access to data or the internet through radio waves), same Bluetooth (4,0) (a wireless technology for exchanging data at a short range distance).

The only difference in the camera of the I- Phone 5S and the other two models is the flash being True Tone Flash instead of Led flash, which refers to the type of light in the flash, but pixels (8 megapixels with 1.5 μ pixels) the cover lens, illumination sensor, autofocus, tap to focus, face detection, and panorama are all the same.

The Video Recording is also the same in terms of pixels (1080p) making it a high definition camera, able to do slow motion recordings, stabilizing when needed, focus, equipped with face detection, and zoom up to three times. They are all equipped with "Siri" the intelligent assistant used to send messages, set reminders, and more by recognizing the owner's voice. They all use the same adapter cable, battery, headphones and Sim card.

So the only drastic difference from one model to another is the colour. I- Phone 4 is available in black and white. I- Phone 5C, in white, pink, yellow, blue, and green. I- Phone

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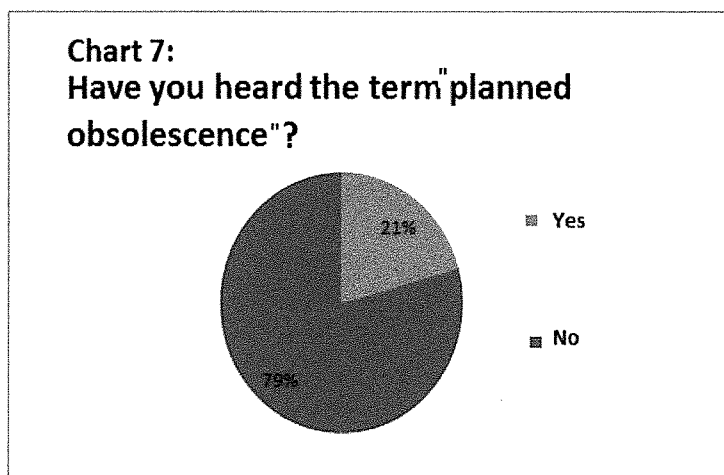
5S is available in gold, silver or grey. This is a clear example of style obsolescence, where colour plays with trends to make one or the other more desirable. Phone cases are another technique used in style obsolescence postponement obsolescence and functional obsolescence since they are specially designed for a specific model. It plays with the style to create a unique personalized phone, to fit with the individual's taste. It is not included with the phone, so buying the phone, to guarantee its' protection requires the purchase of this product, and since dimensions slightly change, the case of a model becomes obsolete when the model is changed. Cases for I- Phones may cost between 30 and 50 US dollars.

Despite the insignificant changes between each model's hardware and software, the most explicit change is always shown in the price. The I- Phone 5S, with capacity of 16 GB³ is currently 1'599,000 Colombian pesos. The I- Phone 4S with the same capacity of 16 GB³ is 670.000 Colombian pesos. The difference is absurd, it's 929,000 Colombian pesos, which is even more than the cost of the I- Phone 4S itself.

Even though only strategies for Apple were explained, very similar if not the same occurs in many other cell phone brands.

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CONCLUSIONS



Young people purchase relatively more frequently than older consumers in relationship with the amount of time they've lived.

As chart seven shows, planned obsolescence continues to be an unknown subject, as a secret technique it is incredibly powerful. Only 21% had heard the term before, while to the other 79% it was an alien subject. It is also important to take into account that from this 21%, 70,97% are students from a private school which have been talked about the topic before, leaving only 29,03% aware by their own means.

Planned obsolescence is a brilliant technique speaking from economic terms, since it has shown to be effective in Cali as it remains for the majority unknown, due to the difficulty there is to track given the different companies offering the mobile phone communication service, so facts such as exact quantities sold within a period of time in the city are not available to the public, and the varied ways in which it presents itself like style,

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postponement, functional and technical obsolescence and the way in which they are combined within the same phone has made a relative increase in purchase of phones in Cali during the last five years.

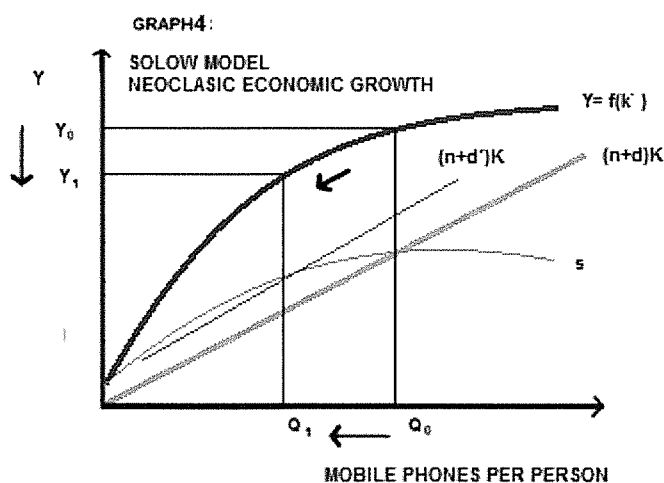
Planned obsolescence is not to be seen as an evil strategy, it is responsible for the creation of multiple jobs such as salesmen, by rising the profit expectations thus working as an incentive for enterprisers to create new companies; designers, revolving around the innovation of old products to make them more appealing to the consumer; models and other people involved with media, which is greatly involved with advertisement which plays an important role in design obsolescence by making buyers unhappy with their image and their products to make them desire new goods; architects, with innovative designs; scientists, altering products and creating new, and many more. They also have great impact on the existence of malls, since it's the place where different brands of products compete between themselves and with old products; innovation in products; and the industry of development.

However, it is also greatly responsible for environmental horrors, pollution, waste, and all sorts of contamination. Most of what are called, "dead" products are sent to third world countries illegally under the excuse that they are second hand goods, however the damage of most is beyond repair. An article from the New York Times dated May 2013, "Where do old cellphones go to die?" explains how Americans replace their cellphones every 22 months, so that by 2010 more than 150 million old phones without use, and this waste was delivered to countries in Africa and Asia such as Ghana, Guiyu, China, India leaving more

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than 85 000 tons of waste (just in cell phones) in “electronic dumps”, where children would pile the waste and burn it to extract metals which they could use like copper, gold and silver. It explains how toxic batteries are since they contain cadmium, mercury, lithium and many others which result really unhealthy to inhale, causing irreversible neurological damage. The French critic Serge Latouch said, “anyone who thinks that infinite growth is consistent with a finite planet is either crazy or an economist” referring to the impossibility of the planet of keeping up with economic growth and the unsustainability of the system in a long term.

The American Nobel winning economist, Robert Solow’s model (graph 4) shows that production (Y) is a function that depends on the capital per capita (K') or, available capital. The thick blue line represents the available resources for production. This factors include workers n , and depreciation of capital (d) times the capital available (K). The green line (S) are savings. The model shows that savings and available resources determine the



$d' > d$

production and give the optimum number of machines or capital available per citizen. So that where the light blue line meets the green, each person has Q_0 machines available and the maximum production of

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the economy is Y_0 . If the capital is understood as being the phones and planned obsolescence appears, the economic effect is increasing the depreciation (d) because machines would become obsolete faster. That causes the function $(n+d)K$ with the new d (d') to move to the left, creating a new equilibrium where the production and machines per citizen is smaller (Q_1, Y_1) which represents a decrease in the level of production, and detrimental to economy as a whole.

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BIBLIOGRAPHY

COQUECO GARCÍA, Luis Alberto; BENAVIDES URIBE, Nelson Dario; MARIN MARIN, William; MOLINA MOGOLLÓN, Henry (Asesor). A & Control. Cali : Universidad Icesi, 2002. 7p.. Sig.Top. C620

PRADA DAZA, Raymond. Análisis de la crítica social al marketing. En: ESTUDIOS GERENCIALES. No. 84 - Julio/Septiembre 2002 / ESTUDIOS GERENCIALES p. 79-88

RESTREPO VASQUEZ, Xavier; ESCALLÓN SANTAMARÍA, Víctor Javier (Asesor). Estado actual del avance y propuesta de una herramienta para el control de inventario de repuestos a través de una cadena de abastecimiento [recurso electrónico]. Cali : Universidad Icesi, ©2012. ; 1 CD- ROM (4 3/4 plg.). Sig.Top. TG658.787/R436e/CD-ROM

JOHNSON, H. Thomas; DURAN, Marta (Traductor); KAPLAN, Robert S.. La contabilidad de costes. auge y caída de la contabilidad de gestión. Barcelona : Plaza & Janés Editores, 1988. Sig.Top. 657.42/J67 e.1

Impacto máximo , obsolescencia inmediata: re-ciclaje : anotaciones para un metapanaorama de la arquitectura contemporánea. Jose Ramon Moreno Perez. En: Arquitectura : revista del Colegio Oficial de Arquitectos de Madrid, coam. No. 336. 20-27. ISSN 0004-2706

Implicaciones de la obsolescencia profesional del contador. Horacio Aguiar Jaramillo. En: Contaduría, Universidad de Antioquia. No. 08. 67-74. ISSN 0120-4203

Memoria y tiempo, Juan Calduch. Juan Calduch. Alicante : Editorial Club Universitario. ECU, 2002. 101 p. Temas de composición arquitectónica, 11. ISBN 8484542041 (729.11 C146 v.11)

In what way has Planned Obsolescence affected the way in which Mobile Phone technology is consumed in Cali over the last five years?

Posmodernidad y otros epígonos, Juan Calduch. Juan Calduch. Alicante : Editorial Club Universitario. ECU, 2001. 103 p. Temas de composición arquitectónica, 10. ISBN 8484541126 (729.11 C146 v.10)

QFD : la función despliegue de la calidad : una guía práctica para escuchar la voz del cliente. Marvin Eduardo González Espinosa. México : McGraw-Hill, c2001. 163 p. : il.. ISBN 9701032128 (658.562 G643q)

Priale Z., RPZ. ; Bardhan, PB. (FEB 1996). Endogenous growth theory in a vintage capital model. Perú: Esan.

(1994). Tiempo óptimo de reposición por obsolescencia del equipo. MEMOS DE INVESTIGACIÓN; No. 147, 1994.

"Brooks Stevens, 83, Giant in Industrial Design". The New York Times, John Holusha, January 7, 1995. January 7, 1995.

<http://www.rtve.es/alacarta/videos/programa/documental-comprar-tirar-comprar/1382261/>

http://www.eltiempo.com/colombia/cali/ARTICULO-WEB-NEW_NOTA_INTERIOR-12735002.html

<http://www.nytimes.com/1995/01/07/obituaries/brooks-stevens-83-giant-in-industrial-design.html?scp=1&sq=brooks%20stevens&st=cse>

<http://www.caracol.com.co/noticias/economia/en-colombia-hay-mas-celulares-que-personas/20110518/nota/1474443.aspx>

In what way has Planned Obsolescence affected the way in which Mobile Phone technology is consumed in Cali over the last five years?

<http://www.elspectador.com/tecnologia/articulo-246966-colombia-hay-44725636-telefonos-celulares>